

REMARKS

This is in response to the Office Action mailed on May 6, 2004. Claims 1-41 were pending in the application. All pending claims were rejected. With this amendment, claims 1-41 remain unchanged and new claim 42 has been added.

On page 2 of the Office Action, the Examiner objected to two informalities in the specification. In the current Amendment, the specification has been amended to correct the informalities noted by the Examiner. Applicant respectfully submits that the specification no longer contains any of the informalities noted by the Examiner.

On pages 2-14 of the Office Action, the Examiner rejected claims 1-41 under 35 U.S.C. §102(e) as being anticipated by Tran et al. (U.S. Pat. No. 5,987,409, hereinafter "Tran"). Applicant respectfully traverses the Examiner's rejection.

The present invention deals with providing a speech recognition user with alternatives to a recognized speech output, once the user has identified a portion of the recognized speech output that is incorrect. The present invention first generates a reference path of recognized words based on the input speech data. Then, the invention receives an operator selection input indicative of a selected portion of the recognized speech for which alternatives are to be generated. Once the selected portion has been identified by the operator, the present invention calculates boundary conditions for alternatives based on the selected portion. From a hypothesis store, the present invention then constructs alternate subpaths satisfying the calculated boundary conditions. This is neither taught nor suggested by Tran.

Instead, Tran begins by identifying a word sequence (the first word sequence) that has a best acoustic correspondence to an input speech signal. The first word sequence is saved as a branch with edges representing words and nodes representing word

boundaries. Tran then generates alternatives to the first word sequence. In doing so, Tran simply teaches that, for an alternate word sequence to be generated, it must simply have one node in common with the branch representing the first word sequence. Specifically, Tran teaches that an alternate word sequence may be generated if it has any node, at all, in common with the first word sequence, regardless of which portion of the first word sequence is incorrect. Tran goes on to teach calculating alternates to the first word sequence under this assumption.

There is no mention, whatsoever, of receiving an operator input selecting a portion of the first word sequence that is misrecognized, and for which alternatives are to be generated. Tran neither teaches nor even mentions this.

Similarly, there is no teaching or suggestion, whatsoever, in Tran of calculating boundary conditions based on such an operator selection of misrecognized words. Tran does not teach or mention receiving an operator selection identifying misrecognized words, or calculating boundary conditions based on that operator input.

In addition, Tran specifically fails to teach or suggest identifying an alternative based on the calculated boundary conditions. Thus, Tran does not teach receiving an operator selection input that identifies misrecognized speech (for which alternatives are to be calculated), Tran does not teach calculating boundary conditions based upon such an operator selection input, and Tran does not teach constructing alternate subpaths satisfying the boundary conditions previously calculated. Thus, Tran specifically fails to teach or suggest the present invention.

Specifically, independent claim 1 is a method of generating alternatives to words indicative of recognized speech. Claim 1 includes generating a reference path of recognized words,

and "receiving an operator selection input indicative of a selected portion of the recognized speech for which alternatives are to be generated; calculating boundary conditions for alternatives based on position bounds of a reference subpath corresponding to the selected portion of the recognized speech; and constructing from a hypothesis store, corresponding to the input speech data, alternate subpaths satisfying the boundary conditions." This is neither taught nor suggested by Tran. Therefore, Applicant submits that independent claim 1 is allowable over Tran.

Independent claim 25 is a speech recognition system for receiving a speech input and generating recognition data indicative of words recognized in the speech data, and for generating alternates to words in the recognition data. Claim 25 specifically includes "an alternative generator... configured to receive the reference path and a user selected portion of the reference path to be changed, and to calculate boundary conditions for the selected portion of the reference path to obtain a reference subpath and access the hypothesis lattice to generate alternative subpaths to replace the reference subpaths based on the boundary conditions calculated." As discussed above, these items are neither taught nor suggested, in any way, by Tran. Therefore, Applicant submits that independent claim 25 is allowable over Tran.

In addition, independent claim 42 is a method of generating correction alternatives to misrecognized words in speech data. Claim 42 includes "receiving an operator selection input indicative of a selected misrecognized portion of the recognized speech for which alternatives are to be generated; calculating boundary conditions for alternatives based on position bounds of a reference subpath corresponding to the selected misrecognized portion of the recognized speech; and constructing... alternate subpaths satisfying the boundary

conditions." Applicant thus submits that independent claim 42 is allowable over Tran as well.

Another embodiment of the present invention involves generating the hypothesis lattice discussed above, and storing that hypothesis lattice with an application that also contains speech data. For instance, the user may use a speech recognition system for dictating a document. The user may wish to dictate the document, but edit it at a later time. In the past, it has been highly cumbersome to store the scores associated with speech recognition hypotheses, along with the application, for later processing and modification. Therefore, the present invention stores the data as a hypothesis lattice so that it can be much more conveniently stored and used at a later time to generate alternates.

There is no mention in Tran of storing any type of hypothesis lattice along with the speech data in an application, such that it can be used to generate hypotheses during a subsequent editing process. Indeed, there is no mention in Tran of storing any type of hypothesis lattice with an application, at all.

By contrast, independent claim 20 includes "generating a reference speech path and a hypothesis lattice based on the speech data, the hypothesis lattice representing alternate recognition paths corresponding to the speech data ... storing the hypothesis lattice with the application; receiving a user selection input indicative of a portion of the reference speech path to be corrected; in response to the user selection input, accessing the retrieved hypothesis lattice with the speech recognition engine; and constructing, at the engine, alternate subpaths to replace portions of the reference speech path based on the hypothesis lattice." This claim specifically sets forth storing the lattice separate from the speech recognition engine (i.e., with the application) and then retrieving the lattice and

using the engine to generate alternatives. Since Tran neither teaches nor suggests storing any type of hypothesis lattice with an application, then retrieving it and using a speech recognition engine to generate the alternatives in response to a user selection input, Applicant submits that independent claim 20 is allowable over Tran et al.

It is thus submitted that independent claims 1, 20, 25 and 42 are allowable over the Tran et al. Reconsideration and allowance of those independent claims are respectfully requested. Similarly, it is respectfully submitted that dependent claims 2-19, 21-24 and 26-41 are also allowable by virtue of their dependence on the allowable independent claims. Therefore, reconsideration and allowance of those claims are respectfully requested as well.

In addition, it is respectfully submitted that many of the dependent claims are independently patentable. For instance, dependent claims 2, 23 and 28 specifically teach identifying a beginning boundary condition corresponding to the first boundary word preceding the user selected portion of the recognized speech. Similarly, dependent claims 3, 24 and 29 teach identifying an ending boundary condition corresponding to the second boundary word following the user selected portion of the recognized speech. None of these features are taught or suggested by Tran.

In conclusion, Applicant submits that, for at least the reasons outlined above, the Examiner's rejections under 35 U.S.C. §102(e) should be withdrawn. It is also respectfully submitted that new claim 42 is in allowable form. Reconsideration and allowance of all pending claims, 1-42, are respectfully requested.

The Director is authorized to charge any fee deficiency required by this paper or credit any overpayment to Deposit Account No. 23-1123..

Respectfully submitted,

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